Closure Plan for Spent Pickle Liquor Storage Tanks
Site S-71
EPA I.D. No. OHD 004220810
United States Steel Corporation
Cuyahoga Plant
Cuyahoga Heights, Ohio

General Facility Description

United States Steel Corporation (USSC) has operated a spent pickle liquor storage facility, designated as Site S-71, within the Cuyahoga Plant boundaries from October 1980 to the present. USSC is permitted under interim status regulations, Hazardous Waste Permit No. 02-18-0091, to operate Site S-71 and other hazardous waste facilities within the Cuyahoga Plant. Storage Site S-71 is used for the temporary storage of all spent pickle liquor generated within Cuyahoga. All spent pickle liquor subsequently is shipped offsite for disposal or use as a treatment chemical in a POTW.

Site S-71 consists of four 40,000-gallon carbon steel storage tanks lined with acid-resistant brick and rubber, a pump house, two fiberglass spent pickle liquor collection tanks (approximately 1,000-gallon each) and transfer pumps, rubber-lined interconnection piping, and an acid loading area. The four storage tanks are located on bare ground covered with crushed slag within a 70 x 100 foot area adjacent to the operating facilities. One of the four carbon steel storage tanks has been removed from service and is not expected to be rebuilt in the future.

Waste Characterization

The waste stored in the two collection tanks and carbon steel storage tanks is spent acid, primarily sulfuric and some hydrochloric, from the pickling of steel. Spent pickle liquor is a listed EPA hazardous waste (K062). The characteristics for which this waste is listed are corrosivity and EP toxicity. Lead and hexavalent chromium are the hazardous constituents of concern.

Maximum Waste Inventory

At any time during the life of the facility, the maximum inventory of waste in storage would be approximately 162,000 gallons including the four storage tanks and both fiberglass collection tanks. However, because one of the four storage tanks is out of service, the available storage capacity is 122,000 gallons. Typically, offsite shipments of spent pickle liquor have averaged about 200,000 gallons per month.

Normal Operating Procedure

Spent pickle liquor is generated as a waste product from steel pickling operations conducted at two separate facilities within Cuyahoga Plant:

- No. 1 Wean Cleaner in the Cold Rolled Department
- No. 5 cleaner in the Wire Mill

Pickle liquor is wasted from the No. 1 Wean Cleaner on a continuous basis and flows by gravity to two 1,000-gallon fiberglass storage tanks. Automatic controls and manual override operation are available to periodically pump down the tanks and transfer the spent pickle liquor to the four storage tanks. Pickle liquor from the No. 5 cleaner is wasted in a different manner. When the pickle liquor capacity is exhausted, the entire contents of the process dip tank is batch dumped. A set of pumps are activated manually to transfer the contents of the process dip tank directly to the storage tanks.

Under normal operating conditions, the carbon steel storage tanks are periodically emptied with the spent pickle liquor pumped into tank trucks and subsequently transported offsite for reuse in a POTW. Typically, all spent pickle liquor is shipped to the Northeast Ohio Regional Sewer District for use as a chemical in the treatment of wastewater. In the event that the Regional Sewer District is unable to

accept spent pickle liquor shipments, the material is shipped offsite for disposal by deep well injection (Chemical Waste Management, Vickery, Ohio disposal site).

Removal of Waste Inventory

At closure, the following steps will be taken to remove all spent pickle liquor from the Cuyahoga Plant:

1. Spent pickle liquor in process dip tanks at No. 5 cleaner and No. 1 Wean Cleaner will be wasted and pumped to the storage tanks.

2. Fiberglass collection tanks serving No. 1 Wean Cleaner will be emptied and contents pumped to the carbon steel storage tanks.

3. The carbon-steel storage tanks will be pumped out as completely as possible and the contents transferred to tank trucks.

4. The tank trucks will haul the spent pickle liquor offsite for reuse in a POTW.

Procedures for Facility Decontamination

After all waste inventory has been removed, the following steps will be taken to decontaminate Site S-71 and related facilities.

1. Flush the pipeline from the No. 1 Wean Cleaner pickle tank to the two 1,000-gallon fiberglass collection tanks with clean water. Pump this rinse water to the carbon-steel storage tanks. Repeat process a total of three times.

2. Rinse both fiberglass tanks and flush the pumps with clean water. Pump rinse water to the carbon steel storage tanks.

Repeat process a total of three times. Alternate pump operation to assure flushing of both pumps and related valving and piping.

3. Flush the piping between the plastic tanks and steel storage tanks with clean water. Transfer all rinse water to the steel storage tanks. Piping will be flushed sufficiently to assure that only clean water remains in low spots of piping runs.

4. Using similar procedures flush the pipeline and pumps leading from the Process Dip Tank on the No. 5 cleaner to the steel storage tanks, making certain that both pumps are operated. Transfer all rinse water to the steel storage tanks. Piping will be flushed sufficiently to assure that only clean water remains in low spots of piping runs.

5. Pump all rinse water collected in the carbon-steel storage tanks into tank trucks. All rinse water will be transported offsite for disposal by deep well injection.

6. Once the storage tanks have been pumped out to the extent possible by the existing equipment, the access ports will be removed from each storage tank to facilitate decontamination. All liquid and solid waste materials found in the tanks will be removed and loaded into vehicles and transported offsite for disposal either for landfilling or deep well injection.

7. Each tank interior will be rinsed three times with clean water and pumped into tank trucks for offsite disposal. As part of the process, each tank's outlet pipes and valves as well as the pumps in the pump house will be thoroughly flushed.

The total amount of rinse water from cleaning operations is estimated to be approximately 22,500 gallons. All rinse waters will be transported offsite for disposal by deep well injection (Chemical Waste Management, Vickery, Ohio Disposal Site).

As part of the closure activates for Site S-71, an independent registered professional engineer will conduct an onsite inspection of S-71, examine waste manifest of final spent pickle liquor and rinse water shipments, and interview plant personnel responsible for maintaining/operating S-71. The engineer's responsibility will include certifying that closure is in accordance with the approved closure plan. If in the opinion of the professional engineer there is evidence of ground contamination in the vicinity of Site S-71 then an investigation of the suspected area would be undertaken to determine the extent of contamination. Based on the subsequent findings, appropriate remedial measures would be implemented. However, it is unlikely that the site is contaminated because pickle liquor releases are routinely contained and corrective action implemented in accordance with Cuyahoga Plant's "Contingency Plan for Emergencies Involving Hazardous Waste Materials."

Closure Certification

During closure activities, an independent registered professional engineer will inspect Site S-71 as necessary to assure that closure has been performed in accordance with the specifications of the approved closure plan. Certificates attesting to the proper closure of Site S-71 will be submitted to the Ohio EPA and USEPA by both the independent professional engineer and the appropriate USSC authority.